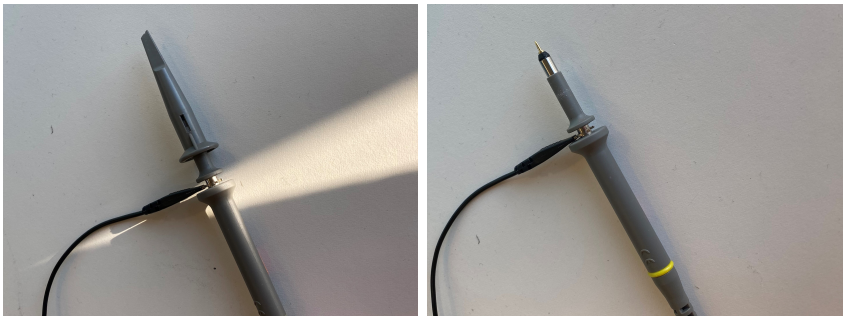
PicoScope Setup Guide

CPRE 288

1 Connecting the PicoScope

1. **Turn your bot off**. There is a switch in the upper left corner of the *TM4C123GH6PM* labeled `Device` and `Debug`. Make sure it is switched to `Device`. Make sure the metal switch on the baseboard is also switched off. No lights should be illuminated on your microcontroller. Ask your TA for help if needed.

2. Get a PicoScope probe from the lab cart in the back of the lab. They are hanging on the side of the cart. A picture of the probes are included in Figure 1. Make sure you get a probe **with a cover** (Figure 1a) and that there is a black alligator clip connected to your probe (hanging off the side). Do not use probes without covers directly in the GPIO headers. Lastly, you will also want to get a small colored wire, called a jumper wire, from one of the electronics kits on the cart.



(a) A probe with a cover (b) A probe without a cover

Figure 1: Two types of Probes

3. Next, plug the probe into the PicoScope box at your lab workstation (Figure 2). Some are slightly different shapes or colors, but all say *PicoScope* on them somewhere. Plug your probe into the `A` channel (far

left on most PicoScopes). To connect the probe, put the probe connector (opposite end from the probe) on the socket (on the PicoScope, labelled `A`) and twist the sleeve on the probe connector to lock it in place.

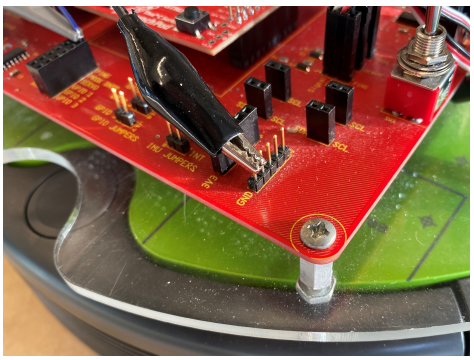
NOTE:
There is a switch on the probe with two settings, X1 and X10. Use the X1 switch setting. This will give better results for the lower range of voltages being measured on the baseboard.

Figure 2: PicoScope

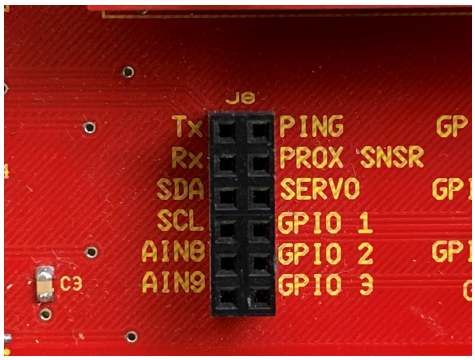
4. Connect the wire to the probe. Pull back the sleeve on the probe cover to expose the connection clip. Put one end of your jumper wire in the clamp and release the sleeve to clip onto the wire. See Figure 3.

Figure 3: Probe with Jumper Wire

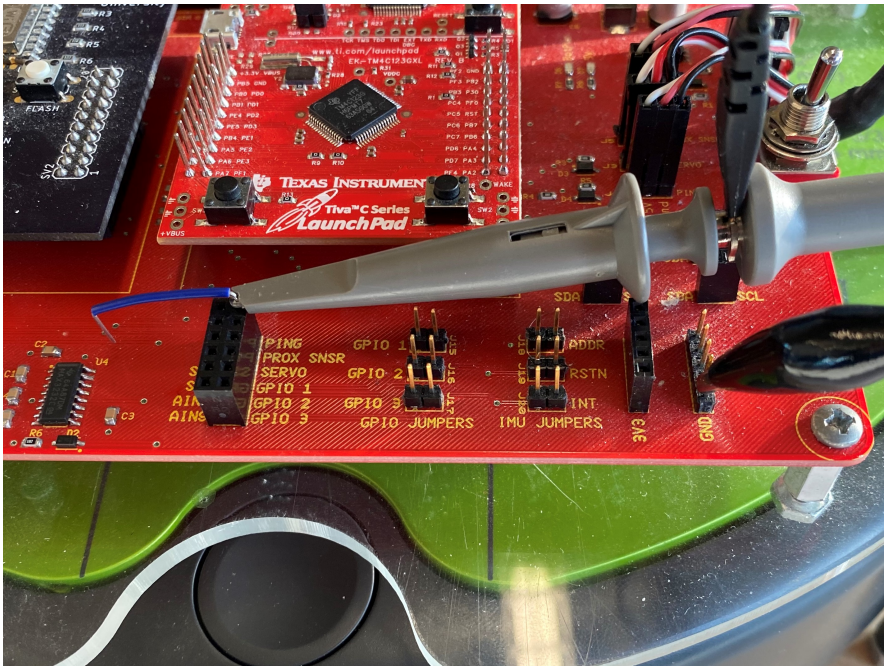
5. Last, connect the probe to the bot baseboard. Start with connecting the alligator clip to one of the ground connectors on the baseboard (Figure 4a). Then, connect either end of the jumper wire into the GPIO header for the `PING` sensor (Figure 4b). The full setup is shown in Figure 4c.



(a) Ground Connection



(b) PING GPIO Header



(c) Overall Probe Setup

Figure 4: PicoScope Probe Setup

2 Set up the PicoScope Software

1. Launch the PicoScope program. Go to the Start menu, and look for a program called `PicoScope 6`.

2. Once the program launches, you will need to set the following settings: (Reference Figure 5)

   (a) View Window: ±`5V`

   (b) Grid: `1ms/div`. You may need to adjust this to see different levels of detail in your graph.

   (c) Trigger: `Repeat`

   (d) Amplitude: `1V`

   After **all** of the steps are complete, you can turn your bot back on with the metal baseboard switch and you should see something similar to Figure 5.

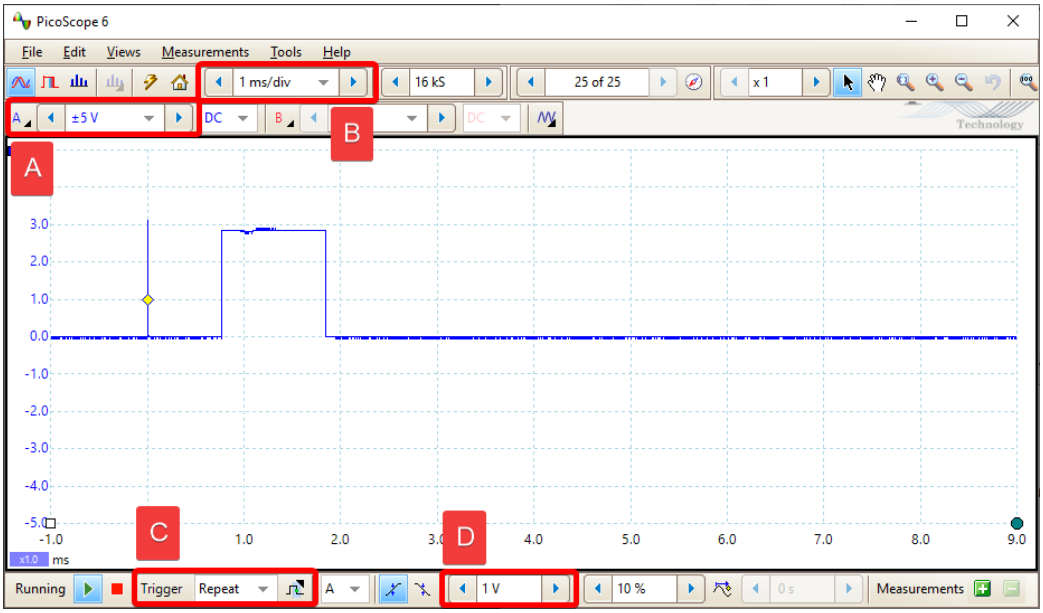


Figure 5: PicoScope Window